tioning. Frequency of vigilance test prompts can be determined in accordance with requirements as determined via field studies.

Safety considerations to avoid driver distraction by the proposed monitoring system may be implemented. Techniques such as utilization of "busy" response prompts especially designed within the system to alert the monitoring control unit that the driver is vigilant but unable to respond at the time due to driving demands.

The TDVM system may include the following components:

1. Analysis Software

This software may include a processing algorithm(s) designed to evaluate various driver prompts and response times. Evaluation of these response times may produce a probability factor associated with driver vigilance for each specific driver. Analysis capability of driver response times may be an important element of the system. Accuracy of vigilance probability outcome, clinical analysis and scientific validation associated with this process may determine effectiveness of the monitoring system.

2. Truck-cabin Steering-wheel Physiological Movement Transducer

This device may adapt to the truck steering wheel and provide output signals subject to a particular zone of the steering wheel, which has been activated by applying various degrees of pressure to the steering wheel.

3. Controller Unit & Monitoring Device (CU&MD)

This device may provide a communication link and data management for interfacing the truck's CU&MD to a remotely located monitoring station.

This device may also provide the transducer interface and transducer signal recording and detection capabilities.

This device may also output control to the driver indicator LEDS and record and transmit vigilance response times to the remote monitoring station.

4. Vigilance LED display

This device may be interfaced to the CU&MD unit and may provide visual response prompt to the truck driver.

5. Remote Recording, Monitoring and Analysis System

This system may facilitate a remote operators visual alarms when vigilance response times are outside acceptable thresholds.

This system may also provide communication links to the truck.

This system may also provide analysis and system reporting to allow real-time tracking of vigilance performance and vigilance alarm status.

Finally, it is to be understood that various alterations, modifications and/or additions may be introduced into the constructions and arrangements of parts previously described without departing from the spirit or ambit of the invention.

What is claimed is:

1. An apparatus for determining a vigilance state of a subject, said apparatus comprising:

a first sensor capable of being operatively coupled to a subject wherein said first sensor monitors at least one physiological variable of said subject and provides a first output signal related to said at least one physiological variable;

a second sensor capable of being operatively coupled to the subject and wherein said second sensor monitors the at least one physiological variable of said subject and provides a second output signal related to said at least one physiological variable of the subject;

a computer processor for receiving said first and second output signals wherein said computer processor compares the first and second output signals to a reference data set, said reference data set being related to the at least one physiological variable of said subject and having been obtained when said subject is in a relaxed or a fatigued physiological state, to generate a data set representing a physiological state of said subject corresponding to said at least one physiological variable of the subject; and

a threshold vigilance state signal set to a low vigilance state in the event that said data set decreases below a predetermined low vigilance state threshold value.

2. An apparatus according to claim **1** wherein one of said first sensor or said second sensor is operatively coupled to a select one member of the set comprising:

a steering wheel; a gear shift structure; an interior portion of a seat for said subject; an exterior surface of the seat; a seat belt for said subject; an accelerator pedal; a clutch pedal; a brake pedal of the vehicle; the subject; a portion of clothing worn by the subject; a portion of protective gear worn by the subject; a portion of a corrective gear worn by the subject; a support structure; a bulkhead; a frame; a console; a mobile structure; an adjustable structure; a telescoping structure; a visor; a ceiling structure; a wall structure; a door structure; a mirror structure; a windscreen or a portion of a vehicle; and,

wherein the other of said first sensor or said second sensor is operatively coupled to a second member, wherein said second member is different than said select one member, and said second member is selected from the set comprising:

a steering wheel; a gear shift structure; an interior portion of a seat for said subject; an exterior surface of the seat; a seat belt for said subject; an accelerator pedal; a clutch pedal; a brake pedal of the vehicle; the subject; a portion of clothing worn by the subject; a portion of protective gear worn by the subject; a portion of a corrective gear worn by the subject; a support structure; a bulkhead; a frame; a console; a mobile structure; an adjustable structure; a telescoping structure; a visor; a ceiling structure; a wall structure; a door structure; a mirror structure; a windscreen or a portion of a vehicle.

3. An apparatus according to claim **1** wherein said at least one physiological variable comprises:

a body movement signal; a body position signal; an electroencephalogram signal; an electromyographic signal; an eye opening sensor signal; an eye blink rate sensor signal; an eye movement sensor signal; an electrical skin resistance signal; a head movement signal; an eye position signal; an eye open versus closed ratio signal; a pulse signal; or a head position signal.

4. An apparatus according to claim **1** wherein at least one sensor is physically coupled to said subject or is disposed spaced from the subject and said at least one sensor further comprises: